

CLAIMS

What is claimed is:

1. A locking mechanism that affords actuation of a device only in response to the use of an appropriate key, the locking mechanism comprising:
5 a housing defining a cavity and having a central axis, the housing including a first end, a second end, and a first cam surface;
a sleeve received at least partially within the cavity, the sleeve including a second cam surface engageable with the first cam surface;
a lock cylinder received at least partially within the sleeve and having a
10 locked configuration and an unlocked configuration, the locked configuration corresponding to the presence of the appropriate key in the lock cylinder;
a guide engaging the sleeve, the lock cylinder coupled for rotation with the guide when the lock cylinder is in the locked configuration and
15 rotatable with respect to the guide when the lock cylinder is in the unlocked configuration; and
an actuator releasably engageable with the lock cylinder, movable with respect to the housing, and adapted for driving connection with the device in the locked and unlocked states of the lock
20 cylinder, the actuator engaged with the lock cylinder for rotation therewith when the lock cylinder is rotated in the unlocked configuration, and moved by the sleeve to a position disengaged from the lock cylinder when the lock cylinder is rotated in the locked configuration.
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2. The locking mechanism of claim 1, wherein the lock cylinder is substantially secured against axial movement with respect to the housing.
3. The locking mechanism of claim 1, wherein the sleeve is axially
30 slidable with respect to the guide and engages the guide for rotation therewith.

4. The locking mechanism of claim 1, wherein the lock cylinder includes a plurality of tumblers that are movable between an extended position and a retracted position, and wherein the tumblers move to the retracted position in response to insertion of the appropriate key into the lock cylinder.

5. The locking mechanism of claim 4, wherein the guide defines an engagement surface, and wherein in response to rotation of the lock cylinder in the locked configuration, the tumblers engage the engagement surface to thereby rotate the guide.

6. The locking mechanism of claim 1, wherein the cam surfaces are movable in camming contact with one another to axially move the sleeve when the lock cylinder is rotated in the locked configuration.

7. The locking mechanism of claim 6, wherein the actuator is positioned in the cavity and is axially moved by the sleeve to a position in which the actuator is disengaged from the lock cylinder, and wherein the guide, the sleeve, and lock cylinder are rotatable with respect to the actuator and the housing when the lock cylinder is in the locked configuration.

8. The locking mechanism of claim 1, wherein:
the actuator includes an axially recessed portion and the lock cylinder includes a radially extending dog; and
the actuator is movable to and from a position in which the axially recessed portion receives the dog and the lock cylinder is engaged with the actuator.

9. The locking mechanism of claim 1, further comprising a biasing member at least partially received within the housing, the actuator having a biasing surface engageable with the biasing member to thereby bias the actuator toward a predetermined angular position with respect to the housing.

10. The locking mechanism of claim 1, wherein the housing includes a sidewall that defines an opening, and wherein at least part of the actuator extends through the opening for connection to the device.

5 11. The locking mechanism of claim 10, wherein the coupling member is a bowden cable.

12. The locking mechanism of claim 10, wherein the coupling member is a radially extending arm.

10 13. A lock assembly comprising:
a housing at least partially defining a cavity and having a central axis;
a lock cylinder received at least partially within the cavity and having a
locked configuration wherein a projecting element extends from
15 the lock cylinder, and an unlocked configuration wherein the
projecting element is retracted with respect to the lock cylinder, the
lock cylinder rotatable with respect to the housing in both the
locked and unlocked configurations;
at least one guide defining at least two engagement surfaces and including
20 a radially-extending drive projection, the projecting element
extending between the engagement surfaces when the projecting
element extends from the lock cylinder;
a sleeve received at least partially within the cavity and surrounding at
least some of the projecting elements, the sleeve defining an
25 aperture that receives the drive projection to non-rotatably couple
the sleeve to the guide and to afford axial movement of the sleeve
with respect to the guide; and
an actuator selectively coupled to the lock cylinder for rotation therewith
in response to rotation of the lock cylinder in one of the locked and
30 unlocked configurations.

14. The locking mechanism of claim 13, wherein the sleeve moves axially when the lock cylinder is rotated in the locked configuration, thereby disengaging the actuator from the lock cylinder.

15. The locking mechanism of claim 13, wherein the sleeve cooperates with the housing when the lock cylinder is rotated in the locked configuration to disengage the actuator from the lock cylinder.

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16. The locking mechanism of claim 13, wherein the at least one guide remains substantially axially fixed when the lock cylinder is rotated.

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17. The locking mechanism of claim 13, wherein the actuator is biased into engagement with the lock cylinder.

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18. The locking mechanism of claim 13, wherein the lock cylinder includes at least one drive dog and the actuator includes at least one recess, and wherein the drive dog engages the recess to couple the lock cylinder and the actuator for rotation together when the lock cylinder is rotated in the unlocked configuration.

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19. The locking mechanism of claim 13, wherein:
the sleeve is slidably engageable with the actuator; and
at least part of the sleeve is movable axially within the chamber.

20. The locking mechanism of claim 13, wherein the lock cylinder is substantially axially fixed with respect to the housing.

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21. The locking mechanism of claim 13, wherein the housing includes a sidewall that defines an opening, and wherein the actuator includes a coupling member that extends through the opening.

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22. The locking mechanism of claim 21, wherein the coupling member is a bowden cable.

23. The locking mechanism of claim 21, wherein the actuator has a radially extending arm.

24. A freewheeling locking mechanism comprising:
a housing defining a cavity and having a central axis;
an actuator rotatably coupled to the housing;
a lock cylinder received within the cavity and including a first set
5 of retractable protrusions, and a second set of retractable
protrusions that is diametrically opposed to the first set of
retractable protrusions, the lock cylinder having an unlocked
configuration corresponding to the presence of a properly coded
key in the lock cylinder, and a locked configuration corresponding
10 to the absence of the properly coded key in the lock cylinder, at
least one of the retractable protrusions having a position extended
from the lock cylinder when the lock cylinder is in the locked
configuration and a position retracted within the lock cylinder
when the lock cylinder is in the unlocked configuration, the lock
15 cylinder being rotatable with respect to the housing in both the
locked and unlocked configurations;
first and second diametrically opposed guides defining a pair of
engagement surfaces for engagement with at least one retractable
protrusion of a respective set of protrusions when the lock cylinder
20 is rotated in the locked configuration;
a substantially cylindrical sleeve surrounding at least some of the
retractable protrusions and at least a portion of the first and second
guides, the sleeve non-rotatably coupled to the guides and axially
movable with respect to the guides; and
25 an actuator selectively coupled to the lock cylinder for rotation therewith
in response to rotation of the lock cylinder in one of the locked and
unlocked configurations.

25. The freewheeling locking mechanism of claim 24, wherein the
30 sleeve moves axially when the lock cylinder is rotated in the locked configuration,
thereby disengaging the actuator from the lock cylinder.

26. The freewheeling locking mechanism of claim 24, wherein the sleeve cooperates with the housing when the lock cylinder is rotated in the locked configuration to disengage the actuator from the lock cylinder.

5 27. The freewheeling locking mechanism of claim 24, wherein the guides remain substantially axially fixed when the lock cylinder is rotated.

28. The freewheeling locking mechanism of claim 24, wherein the actuator is biased into engagement with the lock cylinder.

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29. The freewheeling locking mechanism of claim 24, wherein the lock cylinder includes at least one drive dog and the actuator includes at least one recess, and wherein the drive dog engages the recess to couple the lock cylinder and the actuator for rotation together when the lock cylinder is rotated in the unlocked configuration.

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30. The freewheeling locking mechanism of claim 24, wherein the housing defines a first cam surface, and the sleeve defines a second cam surface, and wherein when the sleeve is rotated with respect to the housing, the first and second cam surfaces cooperate to move the sleeve axially with respect to the housing.

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31. The freewheeling locking mechanism of claim 24, wherein the lock cylinder is substantially axially fixed with respect to the housing.

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32. The freewheeling locking mechanism of claim 24, wherein the housing includes a sidewall that defines an opening through which the actuator extends.

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33. The freewheeling locking mechanism of claim 32, wherein the coupling member is a bowden cable.

34. The freewheeling locking mechanism of claim 32, wherein the actuator has a radially extending arm.